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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/007,855	11/03/2001	James F. Cameron	50285	7120

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EXAMINER

THORNTON, YVETTE C

ART UNIT

PAPER NUMBER

1752

DATE MAILED: 08/13/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/007,855

Applicant(s)

CAMERON ET AL.

Examiner

Yvette C. Thornton

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11/3/01.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-44 is/are pending in the application.
- 4a) Of the above claim(s) 18-21 and 35-44 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 24-32 is/are rejected.
- 7) ☒ Claim(s) 6-17, 22-23, 33-34 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

This is written in reference to application number 10/007855 filed on November 3, 2001 and published as US 2003/0027061 a1 on February 6, 2003.

Information Disclosure Statement

1. The Information Disclosure Statement filed on July 1, 2003 has been entered and fully considered.

Election/Restrictions

2. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-17 and 22-34, drawn to a photoresist composition and photoacid generator thereof, classified in class 430, subclass 270.1.
 - II. Claims 18-21, drawn to a method of using the said composition, classified in class 430, subclass 322.
 - III. Claims 35-44, drawn to a method of making the said photoacid generator, classified in class 562, subclass 113.
3. The inventions are distinct, each from the other because of the following reasons:
 - a. Inventions I and II are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case the process for using the product as claimed can be practiced with another materially different product such as a composition comprising a photoacid generator which generates a

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phosphoric acid instead of the claimed α,α -difluoroalkyl sulfonic acid. Also the product as claimed can be used in a materially different process of using that product such as in the construction of photomasks, liquid crystal display devices and in the field of coatings.

b. Inventions I and III are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case product as claimed can be made by another and materially different process such as by reacting a sulfoxide, an anhydride and a fluorinated sulfonic acid.

c. Inventions II and III are related as process of making and process of using the product. The use as claimed cannot be practiced with a materially different product. Since the product is not allowable, restriction is proper between said method of making and method of using. The product claim will be examined along with the elected invention (MPEP § 806.05(i)).

4. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

5. During a telephone conversation with Peter Corless on August 6, 2002 a provisional election was made with traverse to prosecute the invention of group I, claims 1-17 and 22-34.

Affirmation of this election must be made by applicant in replying to this Office action.

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Claims 18-21 and 35-44 are withdrawn from further consideration by the examiner, 37

CFR 1.142(b), as being drawn to a non-elected invention.

6. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Objections

7. Claim 5 is objected to because of the following informalities: Claim 5 as written depends upon itself. Appropriate correction is required.

8. Claims 6-17, 22-23 and 33-34 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim cannot depend from any other multiple dependent claim. See MPEP § 608.01(n). Accordingly, the claims 6-17, 22-23 and 33-34 have not been further treated on the merits.

Claim Interpretations

9. Although claims 6-17, 22-23 and 33-34 have not been further treated on the merits, the examiner notes that claims 10 and 34 fail to contain the structures of claimed formula I, IA, II, III, IIA, IV, IVA, V, VA, VI, VIA, VII or VIIA.

10. The examiner also notes that formula I, IA and II of claims 10 and 34 fails to further limit claim 8 and formula III-VIIA fails to further limit claims 5-7 according to the structure presented in the specification.

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11. The examiner further notes that instant claims 2 and 25 are the only claims, which prohibit the use of a perhaloalkyl group.

Claim Rejections - 35 USC § 102

12. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

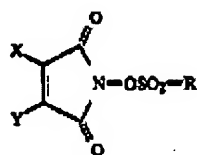
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

13. Claims 1-2, 5, 24-25 and 28-30 are rejected under 35 U.S.C. 102(b) as being anticipated by Pawlowski (EP 1033624 A1). Example 101 of Pawlowski exemplifies a positive working chemically amplified radiation sensitive composition comprising a copolymer of 4-hydroxystyrene/4-t-butyloxycarbonylstyrene and the photoacid generator triphenylsulfonium 3,3,3,2,1,1-hexafluoropropane sulfonate which has the formula $(\text{Ph})_3\text{S}^+\text{CF}_3\text{CHF}\text{CF}_2\text{SO}_3^-$ (p.0148). The said composition is spin-coated on a silicon wafer, dried, imagewise exposed and developed to form a positive image (p. 0149-0150). It is the examiner's position that the exemplified ionic sulfonium photoacid generator meets the limitations of the instant claims 2 and 25 when R is CF_3CHF . Example 102 exemplifies a positive working chemically amplified radiation sensitive composition comprising a copolymer of 4-acetoxystyrene/styrene/t-butylmethacrylate and the ionic iodonium photoacid generator diphenyl iodonium 3,3,3,2,1,1-hexafluoropropane sulfonate, which has the formula $(\text{Ph})_2\text{I}^+\text{CF}_3\text{CHF}\text{CF}_2\text{SO}_3^-$ (p. 0151-0153). It is the examiner's position that the exemplified photoacid generator meets the limitations of the instant claims 2 and 25 when R is CF_3CHF .

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Examples 144 and 145 exemplify a negative working chemically amplified radiation sensitive composition comprising a copolymer of 4-hydroxystyrene/4-methoxystyrene and the ionic sulfonium photoacid generator tri(4-t-butylphenyl)sulfonium 3,3,3,2,1,1-hexafluoropropane sulfonate, which has the formula $((CCH_3)_3)_3S^+CF_3CHFCF_2SO_3^-$ (p. 0218-0222). It is the examiner's position that the exemplified photoacid generator meets the limitations of the instant claims 2 and 25 when R is CF_3CHF . See also examples 146-147 (p. 0223-0227). See also claims 1-4, 6, 14, and 24-27.

14. Claims 1-4, 24-27 and 31-32 are rejected under 35 U.S.C. 102(b) as being anticipated by Sachdev et al. (US 5296332 A). Sachdev teaches a photoresist composition comprising in admixture (a) a film-forming aromatic polymer resin; (b) an acid catalyzable crosslinking agent; and (c) a radiation degradable acid generator (c. 2, l. 60-c. 3, l. 3). Suitable photoacid generators for use in the present invention include metallic and non-metallic onium salts and non-metallic sulfonic acid precursors, which generate strong acids upon exposure to radiation. Among the non-metallic sulfonic acid precursors are N-sulfonyloxyimides of the form



where R is selected from the group including $-CF_2CF_2H$, and $-(CF_2)_n-Z$



or



wherein Z can be alkyl, aryl, (c. 6, l. 26-59 and claims 1, 13

and 16). It is the examiner's position that the said N-sulfonyloxyimide meets the limitations of instant claims 2 and 25 when R is $-CF_2CF_2H$ (i.e., claimed R is a substituted alkyl having 1 carbon) and when R is $-(CF_2)_n-Z$ when $n=1$ and Z is any of the said groups. It is also the

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examiner's position that when R is $-(CF_2)_n-Z$; n is 2-4 and Z is any of the said groups, the limitations of claims 3-4 and 26 -27 are met (i.e., claimed R1 and R2 are non-hydrogen substituents). Furthermore, the taught N-sulfonyloxyimides are non-ionic sulfonate compounds as set forth in instant claims 31 and 32.

Conclusion


15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Trefonas, III (US 6280911 B1) pertaining to photoresist compositions comprising blends of ionic and non-ionic photoacid generators.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yvette C. Thornton whose telephone number is 703-305-0589. The examiner can normally be reached on Monday-Thursday 8-6:30.

17. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Janet C. Baxter can be reached on 703-308-2303. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

18. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1495.


Yvette Clarke Thornton
Junior Examiner
Art Unit 1752

yct
August 7, 2003